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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/712,250	11/15/2000	Christian Kroos	49657-850	8730

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EXAMINER	
PATEL, SHEFALI D	

ART UNIT	PAPER NUMBER
2621	

DATE MAILED: 02/12/2004

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/712,250	KROOS ET AL.	
	Examiner	Art Unit	
	Shefali D Patel	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 November 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28* is/are pending in the application.

4a) Of the above claim(s) *9-17 and 26-28* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,18-21,23 and 25* is/are rejected.

7)☒ Claim(s) *5-8, 22, 24* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 November 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Group I (claims 1-8 and 18-25) in Paper No. 4 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

2. Claims 9-17 and 26-28 withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 4.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-2 and 18-19 are rejected under 35 U.S.C. 102(e) as being anticipated by Hirai et al. (hereinafter, "Hirai") (US 6,526,215).

With regard to **claim 1** Hirai discloses a method of measuring the surface motion of each portion of an object surface from a sequence of unit images of the object including first and second unit images (col. 2 lines 30-61; col. 6 lines 26-67), comprising the steps of: determining a plurality of measurement points in an image of said object of a first unit image (the scene change point detector 201 in Figure 2 determines plurality of points in an image frame(s), col. 8 lines 28-

31), said plurality of measurement points having a hierarchical structure of a plurality of levels, with the higher level layer including measurement points larger in number than the lower level layer (the plurality of points have the hierarchical (i.e., tree) structure as seen at 301 in Figures 1 and 3, col. 2 lines 34-54 (the higher level layer (i.e., M-icon) inherently includes points larger in number than the lower level icons. Hiari discloses at col. 2 lines 50-52 that "in the tree having a plurality of layers, an M-icon is in upper layer represents a combination of M-icons in a lower layer belonging to the upper layer"). Also, see col. 7 lines 57-59, col. 9 lines 26-34); determining the points in said object image of said second unit image (the scene change point detector 201 determines a point in the second image as well because the object is composed of plurality of frames as seen in Figures 1 and 3. Col. 2 lines 43-50), corresponding to the measurement points of said first unit image of the lowest level of the hierarchical structure of said plurality levels (col. 2 lines 50-54); and repeating, starting from a level immediately upper than the lowest level to the highest level, the determination of the points corresponding to the measurement points of the first unit image at each level in the image of said object of said second unit image, based on the points corresponding to said measurement points of said first unit image at an immediately lower level of each level in the image of said object of said second unit image (the process is repeated for determining points in the images as seen in Figure 12. See, col. 10 lines 56-67 with reference to Figure 30 as well to col. 11 lines 1-34).

With regard to **claim 2** Hirai discloses determining a plurality of reference points of said object image of said first unit image (the scene change point detector 201 in Figure 2 determines plurality of points in an image frame(s), col. 8 lines 28-31), and determining, based on the

plurality of reference points, arrangement of the measurement points having a predetermined distribution (col. 8 lines 44-47).

Claim 18 recites identical features as claim 1 except claim 1 is a computer data signal claim. Thus, arguments similar to that presented above for claim 1 is equally applicable to claim 18. Applicants' attention is invited to Figure 2 and its' respective portion in the specification in Hirai's invention.

Claim 19 recites identical features as claim 2 except claim 19 is a computer data signal claim. Thus, arguments similar to that presented above for claim 2 is equally applicable to claim 19.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 3-4, 20-21, 23, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirai in view of Deutsch et al. (hereinafter "Deutsch") (US 5,226,175).

With regard to **claim 3** Hirai discloses the method of measuring surface motion according to claim 2 mapping a plurality of points as disclosed above. Hirai does not expressly disclose mapping a plurality of points arranged at prescribed position on s pre-selected prescribed three-dimensional plane in accordance with the three-dimensional shape of object surface. Deutsch discloses this at col. 7 lines 53-58. Hirai and Deutsch are combinable because they are from the same field of endeavor, i.e., editing images. At the time of the invention, it would have been

obvious to a person of ordinary skill in the art to combine the teaching of Deutsch with Hirai. The motivation for doing so is that "to understand the representation, it is helpful to visualize the image as a three-dimensional surface..." as suggested by Deutsch at col. 9 lines 56-60. Therefore, it would have been obvious to combine Deutsch with Hirai to obtain the invention as specified in claim 3.

With regard to **claim 4** Deutsch discloses determining the three-dimensional position of said object by reverse-projecting, onto a prescribed three-dimensional plane, the points of the image of said object in the second unit image corresponding to said measurement points of said first unit image (See, col. 7 lines 47-66 and col. 9 lines 53-60).

Claim 20 recites identical features as claim 3 except claim 20 is a computer data signal claim. Thus, arguments similar to that presented above for claim 3 is equally applicable to claim 20.

Claim 21 recites identical features as claim 4 except claim 21 is a computer data signal claim. Thus, arguments similar to that presented above for claim 4 is equally applicable to claim 21.

With regards to **claims 23 and 25** Deutsch discloses step of determining the points corresponding to said measurement points further including the step of estimating positions of each of the measurement points at the level immediately higher than said lowest level by interpolating position of the point corresponding to each of the measurement points at the lowest level (See, col. 6 lines 32-68 in reference to Figure 3A and its' respective portion in the specification).

Allowable Subject Matter

7. Claims 5-8, 22, and 24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The closest prior art to Hirai and Deutsch are directed to a method of measuring surface motion as disclosed in claims 1-4 and 18-21.

However, the closest prior art fails to disclose anything about obtaining subband images by wavelet transform, with a plurality of resolutions of the same number as said plurality of levels, the object images of said first and second unit images, the plurality of resolutions being in correspondence with the plurality of levels and resolution corresponding to a lower level being selected to be lower; determining the correspondence between the corresponding subband images of the lowest level and the measurement points of said lowest level, for said first unit image; determining image segments having a prescribed relation with each of the measurement points of said lowest level of said subband images of said lowest level obtained for said first unit image; and determining the positions of points in said second unit image, corresponding to each of the measurement points of said lowest level in said first unit image, by determining an image segment of said subband image of said lowest level obtained for said second unit image that represents the highest correlation with the texture of each said image segment; as disclosed in claims 5 and 22. It is for these reasons in combination with all the other elements of the claim that claims 5 and 22 would be allowable if rewritten in independent form including all of the limitation of the base claim and any intervening claims. Claims 6-8, 22 and 24 are allowable for the same reason as claims 5.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 5,592,228; US 5,995,095; US 6,553,071

Wang et al., "Active Mesh – A Feature Seeking and Tracking Image Sequence Representation Scheme," 1994, IEEE, pp. 610-624

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shefali D Patel whose telephone number is 703-306-4182. The examiner can normally be reached on M-F 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo H Boudreau can be reached on 703-305-4706. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DANIEL MARIAM
PRIMARY EXAMINER

Shefali D Patel
Examiner
Art Unit 2621

February 8, 2004